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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/822,725   | 04/13/2004  | Sachiko Hoshino      | 1309.43768X00       | 3017             |
| 24956  | 7590        | 10/05/2005           | EXAMINER            |                  |
| MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.<br>1800 DIAGONAL ROAD<br>SUITE 370<br>ALEXANDRIA, VA 22314 |             |                      | IWASHKO, LEV        |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2186                |                  |

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/822,725

Applicant(s)

HOSHINO ET AL.

Examiner

Lev I. Iwashko

Art Unit

2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04/13/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 07/06/2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Acknowledgement*

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. JP 2004-29028, filed on February 5, 2004.

### *Claim Objections*

1. Claims 1-10 are objected to because of the following informalities:

A: Claim 1, line 2 states "a plurality of channel adapters that each control...". The phrase would be correct if it read "a plurality of channel adapters that each controls...".

Claim 1, line 4 states "a plurality of storage device groups that each provide...". The phrase would be correct if it read "a plurality of storage device groups that each provides...".

Claim 1, line 6 states "a plurality of disk adapters that each control...". The phrase would be correct if it read "a plurality of disk adapters that each controls...".

B: Claim 5, line 2 states "one of the mutually associated queue and counter ...". This phrase would be correct if it read "one of the mutually associated queues and counters...".

C: Claim 7, line 3 states "each constitute". The phrase would be correct if it read "each constitutes...".

D: Claim 10 lines 3-4 state "a plurality of channel adapters that each control...". The phrase would be correct if it read "a plurality of channel adapters that each controls...".

Claim 10, line 5 states "a plurality of storage device groups that each provide...". The phrase would be correct if it read "a plurality of storage device groups that each provides...".

Claim 10, lines 7-8 states "a plurality of disk adapters that each control...". The phrase would be correct if it read "a plurality of disk adapters that each controls...".

Any claim listed in the statement of objection, but not specifically referred to above, is objected to for the reasons stated with respect to the claim(s) from which it depends.

Appropriate clarification and/or correction is required in response to this Office action.

*Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2-7, and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. The following claims show insufficient antecedent basis:

A: Claim 2 (lines 3-4), Claim 3 (lines 5-6), and Claim 4 (lines 7-8) recite "the attribute of a cache management unit". There is insufficient antecedent basis for this limitation in the claim, since the phrase, "the attribute", has not been defined in a previous claim. However, in Section 0033, lines 7-9 of the Specification, Hoshino states "examples of attributes of the cache management unit can include a free state, dirty state, and clean state." It is believed that claims 1 and 3 were referring to the same "attributes" as the Specification, but it is the inventor's responsibility to clarify, define, and specify "the attribute" in the claims.

B: Claim 5 refers to "the mutually associated queue". There is insufficient antecedent basis for this limitation in the claim, since the exact phrase, "the mutually associated queue", has not been defined in a previous claim. It is believed that the inventor was referring to claim 4 (lines 3-4), where he refers to the "counters that are associated with each of the queues". However, there is no explicit reference that these are the "mutually associated queues" to which the inventor is referring in claim 5. It is the inventor's responsibility to clarify and define "the mutually associated queue" in the claims.

C: Claim 6 is rejected due to its direct dependence on Claim 4, which was rejected under 112, second paragraph.

D: Claim 7 (lines 15) recite "the in-use cache management unit". There is insufficient antecedent basis for this limitation in the claim, since the phrase, "the in-use cache management unit", has not been defined in a previous claim. It is the inventor's responsibility to clarify and define "the in-use cache management unit" in the claims.

E: Claim 10 (lines 17-18) recites "the attribute of a cache management unit". There is insufficient antecedent basis for this limitation in the claim, since the phrase, "the attribute", has not been defined in a previous claim. However, in Section 0033, lines 7-9 of the Specification, Hoshino states "examples of attributes of the cache management unit

Art Unit: 2186

can include a free state, dirty state, and clean state.” It is believed that claim 10 was referring to the same “attributes” as the Specification, but it is the inventor’s responsibility to clarify, define, and specify “the attribute” in the claims.

Claim 10 also refers to “the management information items”. There is insufficient antecedent basis for this limitation in the claim, since claim 10 is an independent claim, and the phrase, “the management information items”, has therefore not been defined previously. However, it is believed that the inventor intended to refer to “a plurality management information items” from Claim 1 (lines 10-11). It is the inventor’s responsibility to clarify and define “the cache partition regions” in the claims.

*Claim Rejections - 35 USC § 102*

5. The following are quotations of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1-3 and 8-10 are rejected under U.S.C. 102(e) as being anticipated by Suzuki et al. (US PGPub 2005/0144380)

- Claim 1. A storage subsystem, comprising:
- a plurality of channel adapters that each control the exchange of data with a host device; (Section 0046, lines 1-2)
  - a plurality of storage device groups that each provide a logical storage region; (Section 0028, lines 8-14)
  - a plurality of disk adapters that each control the exchange of data with each of the storage device groups; (Section 0046, line 4)
  - a cache memory that is used by each of the channel adapters and each of the disk adapters; (Section 0028, lines 7-8)
  - a plurality of cache partition regions constituted by logically partitioning the cache memory; (Section 0049, lines 1-2)
  - and a control memory that stores management information for managing each of the cache partition regions, (Section 0063, lines 1-7)
  - wherein the management information is constituted by partition management information items provided in each of the cache partition regions, and common management information that is applied to all of the cache partition regions. (Section 0076, lines 1-7)
- Claim 2. The storage subsystem according to claim 1, wherein the partition management information items and the common management information are established on the basis of the attribute of a cache management unit. (Section 0078, lines 1-14)
- Claim 3. The storage subsystem according to claim 1, wherein:
- the management information is constituted by submanagement information of a plurality of types; (Section 0051, lines 1-11; Section 0076, lines 5-7)
  - and the partition management information items are constituted by partitioning, on the basis of the attribute of a cache management unit, some of the submanagement information items for each of the cache partition regions, the remainder of the submanagement information items being used as the common management information. (Section 0028, lines 8-14)
- Claim 8. The storage subsystem according to claim 1, wherein each of the cache partition regions can be established for each of the channel adapters. (Section 0081, lines 4-6)
- Claim 9. The storage subsystem according to claim 1, wherein one cache partition region among the cache partition regions is established as a common region and a new cache partition region is established by allocating resources belonging to the common region. (Section 0049, lines 9-16)

Claim 10. A method for controlling a storage subsystem that comprises:

- a plurality of upper interface control units that each control the exchange of data with a host device; (Section 0080, lines 3-11; Section 0044, line 5-7; Figure 1, reference CN1)
- a plurality of storage device groups that each provide a logical storage region; (Section 0012, lines 5-11)
- a plurality of lower interface control units that each control the exchange of data with each of the storage device groups; (Section 0050, lines 12-15; Figure 1, reference CN4)
- and memory section that is used by each of the upper interface control units and each of the lower interface control units, (Figure 1, reference 10, reference CN1 and reference CN4))
- the method comprising the steps of: (Section 0077, lines 1-2)
  - o partitioning a cache region provided by the memory section into a plurality of cache partition regions; (Section 0077, lines 2-5, Figure 5)
  - o partitioning management information for each of the cache partition regions in accordance with the attribute of a cache management unit for managing data in the memory section; (Section 0077, lines 5-8)
  - o and managing data in each of the cache partition regions on the basis of each of the management information items. (Section 0076, lines 1-7)

Claims 4-7 would be allowable if rewritten to overcome the rejection(s) under 35

U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lev Iwashko whose telephone number is (571)272-1658. The examiner can normally be reached on Monday-Friday (Alternating Fridays).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on (571)272-4182. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Art Unit 2186

  
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